



United States
Department of
Agriculture

Forest
Service

Southwestern
Region

WSB Book

517 Gold Avenue, SW
Albuquerque, NM 87102

Reply to: 3420

Date: November 4, 1986

Subject: Western Spruce Budworm Biological Evaluation, Alpine
Ranger District

To: Forest Supervisor, Apache-Sitgreaves National Forests

The western spruce budworm (WSB) has been noticeably defoliating portions of the Alpine Ranger District (RD) since 1984. During July and August, Forest Pest Management (FPM) conducted both ground and aerial surveys to determine the extent, severity, and trend of this current budworm outbreak. Ground surveys consisted of the collection of egg mass density data, current years defoliation estimates, and a cursory look at stand conditions within the outbreak area. Western spruce budworm egg mass densities were estimated by collecting foliage on 17, three-tree plots within the general outbreak area and transporting this foliage to Albuquerque for laboratory exam.

Results

Aerial surveys revealed approximately 2,300 acres of defoliation in 1986 (map enclosed). This is slightly lower than the 1985 estimate of 3,000 acres. A ground truth within the general area confirmed the presence of defoliation and the existence of additional acreage of light defoliation not readily visible from the air. Some frost damage was also noticeable in several stands.

Western spruce budworm, population trend can be estimated by determining the current generations egg mass density. For the survey area on the Alpine RD, egg mass densities ranged from 0.0 to 30.9 egg masses per square meter of foliage with a mean estimate of 8.0 per square meter of foliage (egg mass density estimates by plot enclosed). The 1985 mean egg mass density was 8.6 per square meter of foliage. Based on these data, light defoliation can again be expected in the area in 1987. The visibly defoliated area and egg mass densities have remained more or less equal during 1985 and 1986, we do not expect this situation to change significantly in 1987.

Defoliation to current year's foliage, as estimated on egg mass data plots, ranged from undetectable to moderate.¹ Again, 1985 defoliation estimates were similar.

Stand damage as a result of budworm feeding is minimal at this point in the outbreak.

¹Undetectable--<5 percent defoliation to current year's growth.
Light--5 to 35 percent defoliation to current year's growth.
Moderate--35 to 65 percent defoliation to current year's growth.





Stand conditions, as observed at egg mass data collection plots, are not highly vulnerable to budworm damage at this point in time. We do not anticipate serious tree damages (top-kill, understory mortality, etc.) to occur in the near future in this general area. This observation is based principally on the mixed overstory species composition of many stands and the diversity of stand conditions (age, stocking levels, species composition, and height classes) within the survey area. However, the fact that budworm populations have been noticeable the past few years may be an indication the stand susceptibility and vulnerability may be slowly shifting to favor budworm.

Recommendations

Management recommendations for this current WSB outbreak remain essentially unchanged from those presented in our 3420 letter of February 26, 1986. These recommendations encompass:

1. Monitoring--FPM will continue to monitor the current infestation through aerial, ground, and defoliation surveys. District personnel should record all new observations of budworm damage.
2. Silvicultural Treatments--Scheduled management actions within the general outbreak area should be reviewed considering the potential impacts of budworm and possible management opportunities. Stand prescriptions should have a major objective of reducing budworm susceptibility. Cutting strategies appear in FSH 2409.26a, Cutting Methods Handbook. Dwarf mistletoe is also abundant in many stands. Its impact should be considered concurrently.
3. Analysis of Forest Plan Objectives and Potential Pest Conflicts--It is suggested a brief analysis be conducted to determine forest pest impacts to planned resource outputs or management objectives.

As suggested by Forest personnel, it would be useful to schedule a meeting among District, SO and FPM personnel to discuss survey results and recommendations. It may be appropriate to do this in the near future.

JEROME S. BEATTY

DOUGLAS L. PARKER
Director of Forest Pest Management

Enclosures (2)

JPLinnane:1st





WESTERN SPRUCE BUDWORM EGG MASS SURVEY DATA

ALPINE RANGER DISTRICT, APACHE-SITGREAVES NATIONAL FORESTS

1986

Plot No.	Branch Area (M ²)	Egg Masses Per M ²	1986 Defoliation ¹	Habitat Type ²
1	7.100	1.0	Undetectable	ABCO/EREX
2	7.282	1.2	Light	PIPO/EREX
3	8.788	1.3	Undetectable	PIPO/EREX
4	9.015	1.3	Undetectable	PIPO-PIEN/EREX
5	9.549	4.4	Light	PSME/MUVI
6	6.551	16.6	Moderate	PSME/MUVI
7	6.689	19.9	Moderate	PSME/MUVI
8	9.986	8.3	Moderate	ABCO/QUGA
9	8.984	17.8	Moderate	ABCO/Sparse
10	9.526	9.3	Moderate	PSMG/MUVI
11	9.103	0.0	Undetectable	ABLA/EREX
12	8.468	0.0	Undetectable	ABLA/EREX
13	8.729	5.3	Moderate	ABCO/Sparse
14	9.707	2.2	Light	ABCO/EREX
15	10.522	7.1	Light	ABCO/EREX
16	8.600	30.9	Heavy	ABCO/EREX
17	9.466	9.8	Light	PSME/MUVI
Mean	8.710	8.0		
S.E.	0.282	2.1		

¹Defoliation to new growth; undetectable = <5%, light = 5 to 35%, Moderate = 35 to 65%, and heavy = >65%.

²Adapted from DeVelice, et al. 1986. A classification of forest habitat types of northern New Mexico and southern Colorado, USDA Forest Service, RMFRES, Gen. Tech. Rep. RM-131, 59 p.



BLACK RIVER RANGER DISTRICT
APACHE NATIONAL FOREST

ARIZONA

1972

Scale

1 1/2 0 1 2 3 4 5 Miles

LEGEND

Defoliated area detected during
AERIAL SURVEY

• Approximate egg mass sample plot
location

